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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/931,125	09/16/1997	HAE-SEUNG LEE	P54508	3842

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ROBERT E BUSHNELL
1522 K STREET, N.W. SUITE 300
WASHINGTON, DC 200051202

EXAMINER

PORTKA, GARY J

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 06/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/931,125

Applicant(s)

LEE, HAE-SEUNG

Examiner

Gary J Portka

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-9, 11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-8 is/are allowed.
- 6) ☒ Claim(s) 9, 11, and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 3, 6-9, and 11 have been amended, claim 10 has been canceled, and claim 12 has been added by Applicants amendment. Claims 3-9 and 11-12 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones, U.S. Patent 5,572,660, in view of Kakuta, U.S. Patent 5,583,876.

4. As to claim 9, Jones discloses a redundant memory system comprising: a plurality of defect-adaptive devices disposed in a RAID (214-1 through 214-8) as claimed having a first region storing information needed for data recovery (parity), and a second region storing data (see Figure 2D, and column 10 lines 7-18); plurality of caches (254-1 through 254-8) respectively coupled to the devices, each for storing parity information blocks needed for data recovery for the corresponding device (see Figure 2D, and column 10 lines 15-26); controller (210) coupled to each device and cache, with means for selectively controlling writing, reading, and obtaining of parity information to/from each memory device, and storing parity information obtained from a device in a corresponding cache (see Figure 3E, column 2 line 62 through column 4 line

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6, in particular column 3 lines 30-39; column 10 lines 15-26, and column 11 line 55 to column 12 line 13).

Jones does not disclose that the parity is sequentially stored, nor that it is so to a region comprising the most outer cylinder of one of the memory devices. However, in an analogous RAID system Kakuta teaches a means to reduce overhead in updating error correcting codes during a write process by writing them in order to a disk (see Kakuta Fig. 4, col. 3 lines 22-45, col. 7 lines 41-45, col. 8 lines 23-35, and col. 8 line 66 to col. 9 line 6); the code is written sequentially in the order in the direction of rotation of the disk, and the method specifically completes the parity write within a single turn of the drive. It is further noted that the method applies to a distributed parity system such as in Jones, and the first region comprises a most outer cylinder (see Kakuta col. 12 lines 21-28, region D4 is shown at and thus comprises the most outer cylinder). Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to sequentially store the parity in a most accessible region of the memory devices, because this was a known means of reducing the parity update overhead in a write process.

5. As to claim 11, Jones selectively obtains parity from the drives, and selectively stores parity obtained in a corresponding cache (Fig. 3E).

6. As to claim 12, the Jones-Kakuta prior art combination described above with regard to claims 9 and 11 (minus the limitation regarding most outer cylinder) discloses the invention as described.

Allowable Subject Matter

7. Claims 3-8 are allowed.

Response to Arguments

8. Applicant's arguments filed April 23, 2004 have been fully considered but they are not persuasive. Applicants argue that Kakuta does not teach that the parity information is written in a sequential arrangement in the outer cylinder. Examiner disagrees. The section cited regarding this limitation (Kakuta col. 12 lines 21-28) states "The other points except the above are the same as in the case of the embodiment 3." Embodiment 3 describes a writing of parity sequentially (see col. 11 line 63 to col. 12 line 5), and further refers back to collective writing of parity in previous embodiments. The original disclosure of the writing of parity is made in conjunction with Figure 4, which shows that new parity is written sequentially. Therefore examiner maintains that the embodiment 4 is properly interpreted as the recited sequential storing of parity in a region including the outermost cylinder, which is broader than the "sequentially arranged from the most outer cylinder" as previously allowed in other claims. Applicants further argue that Fig. 3E of Jones does not disclose the recitation of selectively obtaining parity from the drives and selectively storing the parity in a corresponding cache. Examiner disagrees, the Fig. 3E of Jones and the corresponding sections of the specification have been discussed regarding these limitations previously; the retrieving of old parity and storing within a parity buffer, in conjunction with the embodiment related to a RAID-5 implementation, discloses these limitations, as was previously described.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary J Portka whose telephone number is (703) 305-4033. The examiner can normally be reached on M-F 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gary J Portka
Primary Examiner
Art Unit 2188

June 8,2004